

**REMARKS****Summary of the Office Action**

The disclosure stands objected to for a minor informality.

Claims 3-6 stand objected to under 37 CFR 1.75 (c) as allegedly being of improper dependent form.

Claims 1, 2 and 7-14 stand rejected under 35 U.S.C. § 103(a) as being obvious over Tsuchino et al. (U.S. Patent No. 4,825,085) (hereinafter “Tsuchino”) in view of Egert (U.S. Patent No. 5,654,084) (hereinafter “Egert”).

Claims 3-6 and 15 stand rejected under 35 U.S.C. § 103(a) as being obvious over Tsuchino and Egert as applied to claims 1, 2 and 7-14, and further in view of Kingsley et al. (U.S. Patent No. 5,153,438) (hereinafter “Kingsley”).

**Summary of the Response to the Office Action**

The specification has been amended at page 1 to improve its form. Claims 1 and 3 have been amended, and new claims 16-29 have been added, to differently describe embodiments of the disclosure of the instant application and to improve the form of the previously-filed claims. Accordingly, claims 1-29 are currently pending for consideration.

**Objection to the Disclosure**

The disclosure stands objected to for a minor informality. In particular, the Office Action notes at page 2, section 1 that the first paragraph of the specification should be updated.

Accordingly, Applicants have amended the paragraph beginning at page 1, line 4 in this regard.

Withdrawal of the objection to the disclosure is respectfully requested.

**Objection to the Claims**

Claims 3-6 stand objected to under 37 CFR 1.75(c) as allegedly being in improper dependent form. Claims 1 and 3 have been amended to differently describe embodiments of the disclosure of the instant application and to improve the form of the claims in light of the Examiner's comments at page 2, section 2 of the Office Action. Accordingly, withdrawal of the objection to these claims is respectfully requested.

**Rejections under 35 U.S.C. § 103(a)**

Claims 1, 2 and 7-14 stand rejected under 35 U.S.C. § 103(a) as being obvious over Tsuchino in view of Egert. Claims 3-6 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsuchino and Egert as applied to claims 1, 2 and 7-14, and further in view of Kingsley. Claims 1 and 3 have been amended to differently describe embodiments of the disclosure of the instant application. To the extent that these rejections might be deemed to still apply to the claims as newly-amended, they are respectfully traversed for at least the following reasons.

Applicants have amended claim 1 to specifically describe that the scintillator panel combination includes a substrate made of "amorphous carbon." In addition, a new independent claim 16 is presented herein that describes a scintillator panel combination includes a substrate made of "graphite."

At pages 3-4 of the Office Action, the Examiner stated that a substrate "may comprise carbon powder or carbon fibers" as allegedly disclosed in Tsuchino. The Office Action goes on to assert at page 4 that "[t]hose skilled in the art appreciate that at least one well-known form of carbon powder is graphite (compressed carbon powder), which would have been obvious if not inherent design choice." The Office Action then asserts further at page 4 that "those skilled in the art further appreciate that carbon materials such as graphite and a-carbon are well known in the art and, absent some degree of criticality, would have been an obvious design choice." Applicants respectfully traverse these assertions with regard to the newly-amended claims for at least the following reasons.

Applicants respectfully submit that Tsuchino merely discloses a carbon fiber sheet as a heat generating body which functions as a substrate for a scintillator. Applicants respectfully submit that such a carbon fiber sheet, as disclosed in Tsuchino, distinguishes from the substrate made of "amorphous carbon" described in the newly-amended independent claim 1 as well as the substrate made of "graphite" described in the newly-presented independent claim 16 for at least the following reasons.

Applicants respectfully submit in this regard that while Tsuchino discloses a carbon black or a carbon fiber sheet, there is no teaching, or even a suggestion, in Tsuchino of utilizing "graphite" or "amorphous carbon" as the material making up the substrate for the scintillator.

Applicants respectfully submit that carbon black is particle-form in nature and as a result, one skilled in the art would not be led to utilize "carbon black" as a material making up a substrate unless such carbon black particles are utilized in a mixture together with a rubber, or plastic material, or the like. Further, Applicants respectfully submit that a carbon fiber sheet is

manufactured by interweaving the carbon fibers among each other and impregnating resin into the interweaved carbon fibers to form the sheet like substrate. In other words, Applicants respectfully submit that in a substrate as that disclosed in Tsuchino, it is apparent in light of the above-discussed structure or formation of the substrate that the utilization of carbon fiber or carbon black results in an uneven distribution of such materials at specific positions of the sheet. As a result, in the substrate of Tsuchino, Applicants respectfully submit that the transparency of a radiation of the substrate is not uniform in a surface direction of the substrate. As a result, Applicants respectfully submit that the rate of the radiation reaching the scintillator is also not uniform in the surface direction of the substrate.

On the contrary, embodiments of the disclosure of the instant application, as described in newly-amended independent claim 1 and newly-added claim 16 which utilize amorphous carbon or graphite as the substrate material, respectively (especially with an arrangement utilizing amorphous carbon as in independent claim 1), results in a uniformity density in the surface direction of the substrate. As a result, Applicants respectfully submit that the rate of the radiation reaching the scintillator is also uniform in the surface direction of the substrate so that a particularly clear image can be obtained as a result of the utilization of the scintillator panel described in embodiments of the instant application.

In light of the foregoing discussion, Applicants respectfully submit that the utilization of amorphous carbon or graphite as the material of the substrate of the scintillator panel is not an obvious design choice, even to one having ordinary skill in the relevant art, in view of the disclosure of Tsuchino.

In further support of this argument, Applicants respectfully submit herewith photographs that respectively illustrate a carbon fiber sheet substrate (attached Exhibit A) and an amorphous carbon substrate (attached Exhibit B). As seen in these Exhibits, Applicants respectfully submit that it is apparent that the amorphous carbon substrate is superior to the carbon fiber sheet substrate at least in the uniformity of the transparency of the associated radiation.

It is thus respectfully submitted that a significant criticality of these particular features of independent claims 1 and 16 has been demonstrated and explained, as set forth above. Accordingly, in the event that independent claims 1 and 16 are not allowed in the next Office Communication, it is respectfully requested that specific art be applied that illustrates “amorphous carbon” as a substrate material and “graphite” as a substrate material in a scintillator panel combination, as described in independent claims 1 and 16, respectively, of the instant application.

Even further, Applicants respectfully submit that in the newly-amended independent claim 1, as well as the newly-presented independent claim 16, a further feature is particularly described in that portions of the first side of the substrate are uncovered by the scintillator. In other words, a first associated feature (1) in this regard is that the substrate is larger than the scintillator formed on the substrate. The claims also include a second associated feature (2) in this regard in that a protective film substantially covers all exposed surfaces of the substrate and the scintillator.

As seen in Tsuchino, Applicants respectfully submit that various embodiments of the scintillator panels are disclosed in Figs. 1(a) to 1(h). However, Applicants respectfully submit that Tsuchino does not disclose, nor even suggest, a scintillator panel having the above-noted

features (1) and (2). Applicants respectfully submit that in embodiments of the disclosure of the instant application, as described in newly-amended independent claim 1 and newly-presented independent claim 16, the combination of these above-noted features (1) and (2) is very important, as will now be discussed in more detail.

More specifically, Applicants respectfully submit that these features (1) and (2) are particularly important for the following reasons. In the handling of the scintillator panel, the sides of the substrate generally are pinched. This is because the strength of the scintillator is relatively weak in comparison with the strength of the substrate.

At the same time, however, Applicants respectfully submit that the substrate is very thin, for example, lower than 1 mm. As a result, a protective film covering the sides of the substrate may be broken as a result of pinching the substrate, which can result in the introduction of undesired humidity entering in from the broken portion of the substrate's sides.

However, in embodiments of the disclosure of the instant application, as described in newly-amended independent claim 1 and newly-presented independent claim 16, the substrate is larger than the scintillator and the uncovered portion of the substrate is covered with the protective film, as discussed previously. As a result, protection from the invasion of undesired humidity is provided by the protective film formed on the uncovered portion of the substrate. In other words, Applicants respectfully submit that the combination of the above-discussed features (1) and (2) results in particularly advantageous results. As a result, Applicants respectfully submit that these combinations of features, as described in independent claims 1 and 16, would not be obvious in view of the cited references.

Accordingly, Applicants respectfully asserts that the rejections under 35 U.S.C. §103(a) should be withdrawn because none of Tsuchino and Egert, whether taken singly or combined, teach or suggest each feature of independent claim 1, as amended. In addition, newly-presented claim 16 is also in condition for allowance for the above-discussed reasons. MPEP § 2143.03 instructs that “[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 409 F.2d 981, 180 USPQ 580 (CCPA 1974).” Furthermore, Applicants respectfully assert that the rejected dependent claims are allowable at least because of their dependence from claim 1, and the reasons set forth above. It is respectfully submitted that the additionally-applied reference to Kingsley with regard to claims 3-6 and 15 does not cure the deficiencies discussed above with regard to Tsuchino and Egert. In addition, the newly-presented dependent claims are allowable at least because of their dependence from claim 16, and the reasons set forth above.

### CONCLUSION

In view of the foregoing, Applicants submit that the pending claims are in condition for allowance, and respectfully request reconsideration and timely allowance of the pending claims. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants' undersigned representative to expedite prosecution. A favorable action is awaited.

**EXCEPT** for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. § 1.16 and 1.17 which may be required, including

any required extension of time fees, or credit any overpayment to Deposit Account No. 50-0573.

This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully submitted,

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